

F. Maxwell (Max) Harper

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Education

University of Minnesota, Minneapolis, MN (2003 – 2009)

Ph.D., Computer Science

Advised by Dr. Joseph A. Konstan

University of Minnesota, Minneapolis, MN (2003 – 2006)

M.S., Computer Science

Carleton College, Northfield, MN (1994 – 1998)

B.A., International Relations and Environmental Studies

Magna Cum Laude

Professional and Research Experience

Amazon, Seattle, WA (2019 –)

Senior Applied Scientist. Developing algorithms, models, and analysis to improve the quality and trustworthiness of a widely-used Amazon recommender system. Led a project to detect offensive language through problem definition, analysis, modeling, and launch; improved on the previous system from estimated F1 of 0.47 to 0.84. Currently developing techniques to identify and mitigate algorithmic bias, and conducting research in the areas of self-disclosure detection and interactive machine learning.

University of Minnesota, Minneapolis, MN (2012 – 2019)

Research Scientist. Led research projects at the GroupLens Center for Social and Human-Centered Computing in the areas of recommender systems and social computing. Managed the MovieLens code, community, and datasets (<https://movielens.org>). Mentored graduate and undergraduate students in research and software development. Taught “Developing the Interactive Web” (~50 students, 2 TAs) and a seminar on “Data Science Methods for Social Computing” (~10 students).

Code 42 Software, Minneapolis, MN (2011 – 2012)

Software Engineer. Built server-side software for CrashPlan, a product with hundreds of thousands of users and many dozens of petabytes of backup data. Contributed to many efforts, with a focus on scalability and automated test coverage.

Blue Shift Software Laboratory, Minneapolis, MN (2009 – 2011)

Founder. Founded a startup business with the broad goal of providing software that supports data-driven decision-making through the synthesis and visualization of existing knowledge. Launched thinkmeter.com and eventburn.com, both hosted on Google App Engine.

Theophilus, Inc., New York, NY (50% time, 2009 – 2010)

Consulting Data Scientist. Built a recommendation engine for an online restaurant deal discovery application. Prototyped and evaluated experimental technologies for automated summarization and recommendation.

University of Minnesota, MN (20% – 50% time, 2009 – 2010)

Post-Doctoral Associate. Coordinated research efforts between the GroupLens research group and researchers from the Department of Writing Studies. Developed machine learning techniques to infer the intent of users of social software. Contributed to a funded NSF grant to extend the group’s work on question and answer Web sites. Mentored graduate students.

University of Minnesota, MN (2004 – 2009)

Research Assistant. Led and participated in several research teams, with the overarching goal of learning and publishing about user behavior in online systems. Collaborated with computer scientists,

economists, and psychologists. Conducted laboratory and field studies, collected and analyzed massive data sets, and developed novel algorithms.

Nokia Research Center, Palo Alto, CA (Summer 2007)

Research Intern. Built the software to drive a network of interactive touchscreen computers that recognize nearby users using Bluetooth signal processing. Investigated the impact on interpersonal relationships through observational analysis, surveys, and data mining.

Early Career (1998 – 2003)

Software Engineer for Fair Isaac (data mining for credit scoring algorithms), AT&T Wireless (data warehousing applications), and OneSecure (web application development). *Systems Administrator Consultant* (20% time) for the Walker Art Center (administration of new media art installations).

Teaching Experience

Department of Computer Science, University of Minnesota, MN (2007, 2016 – 2019)

Instructor. Taught CSCI 5117, “Developing the Interactive Web,” a graduate-level course (40-60 students, 1-2 TAs) on modern web development topics including node.js and react. Previously taught CSCI 5991 (Spring 2018), “Data Science Methods for Social Computing,” a graduate-level seminar (12 students) on data wrangling, visualization, and modeling. Previously taught CSCI 4061 (Spring 2007), “Introduction to Operating Systems,” an undergraduate course (110 students, 3 TAs) on operating systems concepts and UNIX systems programming in C.

Department of Computer Science, University of Minnesota, MN (2005.)

Teaching Assistant. Led lab sections, held office hours, and graded for CSCI 1902, “Structure of Computer Programming 2,” and CSCI 1001, “An Overview of Computer Science.”

Department of Software Engineering, University of Minnesota, MN (2003 – 2004)

Teaching Assistant. Held office hours and graded for SENG 5801, “Software Engineering 1,” and SENG 5115, “GUI Design and Evaluation.”

Peer-Reviewed Publications

Google Scholar: <https://scholar.google.com/citations?user=y9kaCjcAAAAJ&hl=en>

Wang, R., **Harper, F. M.**, & Zhu, H. (2020). Factors Influencing Perceived Fairness in Algorithmic Decision-Making: Algorithm Outcomes, Development Procedures, and Individual Differences. In Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (pp. 1–14). Association for Computing Machinery. <https://doi.org/10.1145/3313831.3376813>

Cheng, H.-F., Wang, R., Zhang, Z., O’Connell, F., Gray, T., **Harper, F. M.**, & Zhu, H. (2019). Explaining Decision-Making Algorithms through UI: Strategies to Help Non-Expert Stakeholders. In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (pp. 1–12). Association for Computing Machinery. <https://doi.org/10.1145/3290605.3300789>

McRoberts, S., Wissbroecker, J., Wang, R., & **Harper, F. M.** (2019). Exploring Interactions with Voice-Controlled TV. ArXiv:1905.05851 [Cs]. <http://arxiv.org/abs/1905.05851>

Sharma, M., **Harper, F. M.**, & Karypis, G. (2019). Learning from Sets of Items in Recommender Systems. ACM Transactions on Interactive Intelligent Systems, 9(4), 19:1-19:26. <https://doi.org/10.1145/3326128>

Zhao, Q., Willemsen, M. C., Adomavicius, G., **Harper, F. M.**, & Konstan, J. A. (2019). From preference into decision making: Modeling user interactions in recommender systems. Proceedings of the 13th ACM Conference on Recommender Systems, 29–33. <https://doi.org/10.1145/3298689.3347065>

Yao, Y., & **Harper, F. M.** (2018). Judging Similarity: A User-centric Study of Related Item Recommendations. In Proceedings of the 12th ACM Conference on Recommender Systems (pp. 288–296). New York, NY, USA: ACM. <https://doi.org/10.1145/3240323.3240351>

- Zhong, Y., Menezes, T. L. S., Kumar, V., Zhao, Q., & **Harper, F. M.** (2018). A Field Study of Related Video Recommendations: Newest, Most Similar, or Most Relevant? In Proceedings of the 12th ACM Conference on Recommender Systems (pp. 274–278). New York, NY, USA: ACM. <https://doi.org/10.1145/3240323.3240395> Best paper nominee.
- Zhao, Q., Willemsen, M. C., Adomavicius, G., **Harper, F. M.**, & Konstan, J. A. (2018). Interpreting User Inaction in Recommender Systems. In Proceedings of the 12th ACM Conference on Recommender Systems (pp. 40–48). New York, NY, USA: ACM. <https://doi.org/10.1145/3240323.3240366>
- Zhao, Q., **Harper, F. M.**, Adomavicius, G., & Konstan, J. A. (2018). Explicit or Implicit Feedback? Engagement or Satisfaction?: A Field Experiment on Machine-learning-based Recommender Systems. In Proceedings of the 33rd Annual ACM Symposium on Applied Computing (pp. 1331–1340). New York, NY, USA: ACM. <https://doi.org/10.1145/3167132.3167275>
- Nguyen, T. T., **Harper, F. M.**, Terveen, L., & Konstan, J. A. (2017). User Personality and User Satisfaction with Recommender Systems. Information Systems Frontiers, 1–17. <https://doi.org/10.1007/s10796-017-9782-y>
- Sharma, M., **Harper, F. M.**, & Karypis, G. (2017). Learning from Sets of Items in Recommender Systems. Presented at the eKNOW 2017: The Ninth International Conference on Information, Process, and Knowledge Management, Nice, France. Retrieved from https://www.thinkmind.org/download.php?articleid=eknow_2017_4_10_68011. Best paper award.
- Zhao, Q., Adomavicius, G., **Harper, F. M.**, Willemsen, M., & Konstan, J. A. (2017). Toward Better Interactions in Recommender Systems: Cycling and Serpentine Approaches for Top-N Item Lists. In Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing (pp. 1444–1453). New York, NY, USA: ACM. <https://doi.org/10.1145/2998181.2998211>
- Kang, J., Condiff, K., Chang, S., Konstan, J. A., Terveen, L., & **Harper, F. M.** (2017). Understanding How People Use Natural Language to Ask for Recommendations. In Proceedings of the Eleventh ACM Conference on Recommender Systems (pp. 229–237). New York, NY, USA: ACM. <https://doi.org/10.1145/3109859.3109873>
- Zhao, Q., Huang, Z., **Harper, F. M.**, Terveen, L., & Konstan, J. A. (2016). Precision CrowdSourcing: Closing the Loop to Turn Information Consumers into Information Contributors. In Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing (pp. 1615–1625). New York, NY, USA: ACM. <https://doi.org/10.1145/2818048.2819957>
- Zhao, Q., Chang, S., **Harper, F. M.**, & Konstan, J. A. (2016). Gaze Prediction for Recommender Systems. In Proceedings of the 10th ACM Conference on Recommender Systems (pp. 131–138). New York, NY, USA: ACM. <https://doi.org/10.1145/2959100.2959150>
- Chang, S., **Harper, F. M.**, & Terveen, L. G. (2016). Crowd-Based Personalized Natural Language Explanations for Recommendations. In Proceedings of the 10th ACM Conference on Recommender Systems (pp. 175–182). New York, NY, USA: ACM. <https://doi.org/10.1145/2959100.2959153>
- Chang, S., **Harper, F. M.**, He, L., & Terveen, L. G. (2016). CrowdLens: Experimenting with Crowd-Powered Recommendation and Explanation. In Tenth International AAAI Conference on Web and Social Media. Retrieved from <http://www.aaai.org/ocs/index.php/ICWSM/ICWSM16/paper/view/13111>
- Harper, F. M.**, & Konstan, J. A. (2015). The MovieLens Datasets: History and Context. ACM Trans. Interact. Intell. Syst., 5(4), 19:1–19:19. <https://doi.org/10.1145/2827872>
- Harper, F. M.**, Xu, F., Kaur, H., Condiff, K., Chang, S., & Terveen, L. (2015). Putting Users in Control of Their Recommendations. In Proceedings of the 9th ACM Conference on Recommender Systems (pp. 3–10). New York, NY, USA: ACM. <https://doi.org/10.1145/2792838.2800179>
- Ekstrand, M. D., Kluver, D., **Harper, F. M.**, & Konstan, J. A. (2015). Letting Users Choose Recommender Algorithms: An Experimental Study. In Proceedings of the 9th ACM Conference on Recommender Systems (pp. 11–18). New York, NY, USA: ACM. <https://doi.org/10.1145/2792838.2800195>

- Chang, S., **Harper, F. M.**, & Terveen, L. (2015). Using Groups of Items for Preference Elicitation in Recommender Systems. In Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing (pp. 1258–1269). New York, NY, USA: ACM. <https://doi.org/10.1145/2675133.2675210>
- Wang, T.-Y., **Harper, F. M.**, & Hecht, B. (2014). Designing Better Location Fields in User Profiles. In Proceedings of the 18th International Conference on Supporting Group Work (pp. 73–80). New York, NY, USA: ACM. <https://doi.org/10.1145/2660398.2660424>
- Nguyen, T. T., Hui, P.-M., **Harper, F. M.**, Terveen, L., & Konstan, J. A. (2014). Exploring the Filter Bubble: The Effect of Using Recommender Systems on Content Diversity. In Proceedings of the 23rd International Conference on World Wide Web (pp. 677–686). New York, NY, USA: ACM. <https://doi.org/10.1145/2566486.2568012>
- Ekstrand, M. D., **Harper, F. M.**, Willemsen, M. C., & Konstan, J. A. (2014). User Perception of Differences in Recommender Algorithms. In Proceedings of the 8th ACM Conference on Recommender Systems (pp. 161–168). New York, NY, USA: ACM. <https://doi.org/10.1145/2645710.2645737>
- Pal, A., **Harper, F. M.**, & Konstan, J. A. (2012). Exploring Question Selection Bias to Identify Experts and Potential Experts in Community Question Answering. *ACM Trans. Inf. Syst.*, 30(2), 10:1–10:28. <https://doi.org/10.1145/2180868.2180872>
- Ren, Y., **Harper, F. M.**, Drenner, S., Terveen, L. G., Kiesler, S. B., Riedl, J., & Kraut, R. E. (2012). Building Member Attachment in Online Communities: Applying Theories of Group Identity and Interpersonal Bonds. *Mis Quarterly*, 36(3), 841–864. <https://doi.org/10.2307/41703483>
- Logie, J., Weinberg, J., **Harper, F. M.**, & Konstan, J. A. (2011). Asked and Answered: On Qualities and Quantities of Answers in Online Q&A Sites. In Fifth International AAAI Conference on Weblogs and Social Media. Retrieved from <http://www.aaai.org/ocs/index.php/ICWSM/ICWSM11/paper/view/3844>
- Dong, X., **Harper, F. M.**, & Konstan, J. A. (2011). Entity-linking Interfaces in User-contributed Content: Preference and Performance. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 2187–2196). New York, NY, USA: ACM. <https://doi.org/10.1145/1978942.1979261>
- Harper, F. M.**, Weinberg, J., Logie, J., & Konstan, J. A. (2010). Question types in social Q&A sites. *First Monday*, 15(7). <https://doi.org/10.5210/fm.v15i7.2913>
- Chen, Y., **Harper, F. M.**, Konstan, J., & Li, S. X. (2010). Social Comparisons and Contributions to Online Communities: A Field Experiment on MovieLens. *The American Economic Review*, 100(4), 1358–1398. <https://doi.org/10.1257/aer.100.4.1358>
- Harper, F. M.** (2009). The impact of social design on user contributions to online communities. Ph.D. Thesis, University of Minnesota. Retrieved from <http://purl.umn.edu/52035>
- Harper, F. M.**, Moy, D., & Konstan, J. A. (2009). Facts or Friends? Distinguishing Informational and Conversational Questions in Social Q&A Sites. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 759–768). New York, NY, USA: ACM. <https://doi.org/10.1145/1518701.1518819>
- McCarthy, J. F., Congleton, B., & **Harper, F. M.** (2008). The Context, Content & Community Collage: Sharing Personal Digital Media in the Physical Workplace. In Proceedings of the 2008 ACM Conference on Computer Supported Cooperative Work (pp. 97–106). New York, NY, USA: ACM. <https://doi.org/10.1145/1460563.1460580> Best paper nominee.
- Harper, F. M.**, Raban, D., Rafaeli, S., & Konstan, J. A. (2008). Predictors of Answer Quality in Online Q&A Sites. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 865–874). New York, NY, USA: ACM. <https://doi.org/10.1145/1357054.1357191> Best paper nominee.
- Harper, F. M.**, Li, S. X., Chen, Y., & Konstan, J. A. (2007). Social Comparisons to Motivate Contributions to an Online Community. In Y. de Kort, W. IJsselstein, C. Midden, B. Eggen, & B. J. Fogg (Eds.), *Persuasive Technology* (pp. 148–159). Springer Berlin Heidelberg. Retrieved from http://link.springer.com/chapter/10.1007/978-3-540-77006-0_20

Sen, S., **Harper, F. M.**, LaPitz, A., & Riedl, J. (2007). The Quest for Quality Tags. In Proceedings of the 2007 International ACM Conference on Supporting Group Work (pp. 361–370). New York, NY, USA: ACM. <https://doi.org/10.1145/1316624.1316678>

Harper, F. M., Sen, S., & Frankowski, D. (2007). Supporting Social Recommendations with Activity-balanced Clustering. In Proceedings of the 2007 ACM Conference on Recommender Systems (pp. 165–168). New York, NY, USA: ACM. <https://doi.org/10.1145/1297231.1297262>

Harper, F. M., Frankowski, D., Drenner, S., Ren, Y., Kiesler, S., Terveen, L., Kraut, B., & Riedl, J. (2007). Talk Amongst Yourselves: Inviting Users to Participate in Online Conversations. In Proceedings of the 12th International Conference on Intelligent User Interfaces (pp. 62–71). New York, NY, USA: ACM. <https://doi.org/10.1145/1216295.1216313>

Frankowski, D., Lam, S. K., Sen, S., **Harper, F. M.**, Yilek, S., Cassano, M., & Riedl, J. (2007). Recommenders Everywhere: The WikiLens Community-maintained Recommender System. In Proceedings of the 2007 International Symposium on Wikis (pp. 47–60). New York, NY, USA: ACM. <https://doi.org/10.1145/1296951.1296957>

Sen, S., Lam, S. K., Rashid, A. M., Cosley, D., Frankowski, D., Osterhouse, J., **Harper, F. M.**, & Riedl, J. (2006). tagging, communities, vocabulary, evolution. In Proceedings of the 2006 20th Anniversary Conference on Computer Supported Cooperative Work (pp. 181–190). New York, NY, USA: ACM. <https://doi.org/10.1145/1180875.1180904> Best paper award.

Drenner, S., Harper, M., Frankowski, D., Riedl, J., & Terveen, L. (2006). Insert Movie Reference Here: A System to Bridge Conversation and Item-oriented Web Sites. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 951–954). New York, NY, USA: ACM. <https://doi.org/10.1145/1124772.1124914>

Harper, F. M., Li, X., Chen, Y., & Konstan, J. A. (2005). An Economic Model of User Rating in an Online Recommender System. In L. Ardissono, P. Brna, & A. Mitrovic (Eds.), User Modeling 2005 (pp. 307–316). Springer Berlin Heidelberg. Retrieved from http://link.springer.com/chapter/10.1007/11527886_40

Posters, Invited Papers, and Other Publications

Wissbroecker, J., & **Harper, F. M.** (2018). Early Lessons from a Voice-Only Interface for Finding Movies. In arXiv:1808.09900 [cs]. Retrieved from <http://arxiv.org/abs/1808.09900>

Harper, F. M. (2017). Recommender Popularity Controls: An Observational Study. In Poster Proceeding of ACM Recsys 2017 (Vol. 1905). Como, Italy: CEUR Workshop Proceedings. Retrieved from http://ceur-ws.org/Vol-1905/recsys2017_poster15.pdf

Raban, D., & **Harper, F. M.** (2008). Motivations for answering questions online. In New Media and Innovative Technologies. Ben Gurion University of the Negev Press. Retrieved from <http://cmsprod.bgu.ac.il/Eng/Centers/burda/Publications/books/usesgratnewm.htm>

Congleton, B., **Harper, F.**, & McCarthy, J. (2008). Linking Mobile Phones and Public Displays for Sharing Online Media in the Physical Workplace. In CHI’08 Workshop: Designing and Evaluating Mobile Phone-Based Interaction with Public Displays, at CHI ’08: SIGCHI Conference on Human Factors in Computing Systems.

Harper, F. M. (2007). Encouraging Contributions to Online Communities with Personalization and Incentives. In C. Conati, K. McCoy, & G. Paliouras (Eds.), User Modeling 2007 (pp. 460–464). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-540-73078-1_65

Harper, F. M., Konstan, J. A., Li, X., & Chen, Y. (2005). User motivations and incentive structures in an online recommender system. In Proceedings of Group 2005 Workshop on Sustaining Community: The role and design of incentive mechanisms in online systems.

Harper, F. M. (2004). Data Warehousing and the Organization of Governmental Databases. In A. Pavlichev & G. D. Garson (Eds.), Digital Government (pp. 236–247). Hershey, PA, USA: IGI Global. Retrieved from <http://dl.acm.org/citation.cfm?id=973560.973576>

Research Grants

Building Blocks for Natural Language Recommenders (PI), Amazon Research Awards, \$100,000 for the period January, 2018 to January, 2019.

HCC-Small: Understanding and Supporting Online Question-Answering Sites (co-author), National Science Foundation, \$445,519 for the period July, 2008 to July, 2011.

SBIR Phase I: Blue Shift Communities – Improving Online Technical Support (PI). National Science Foundation, \$150,000 for the period January, 2010 to July, 2010.

Professional Activities

Conference Chair (2020 – present)

- ACM Conference on Recommender Systems (RecSys): 2022 General Chair
- Amazon Machine Learning Conference (AMLC): Tutorials Chair 2020–2021

Senior Program Committee Member (2019 – present)

- ACM Conference on Recommender Systems (RecSys): 2019–present
- ACM Special Interest Group on Information Retrieval (SIGIR): 2019–present
- ACM Transactions on Intelligent Interactive Systems (TIIS) Board of Distinguished Reviewers: 2017–present

Program Committee Member (2006 – present)

- ACM Conference on Recommender Systems (RecSys): 2008–present
- ACM Conference on User Modeling, Adaptation and Personalization (UMAP): 2018
- The Web Conference (WWW) workshop on “Online Recommender Systems and User Modeling”: 2018
- The Web Conference (WWW): 2011
- ACM Conference on Recommender Systems (RecSys) workshop on “Recommenders and the Social Web”: 2009, 2010
- International Conference on Adaptive Hypermedia (AH) workshop on “Adaptation in the Social Web”: 2008
- International Conference on Human-Computer Interaction (INTERACT) workshop on “Design Principles for Software that Engages Users”: 2007
- International Conference on User Modeling (UM) workshop on “Adaptation and Personalization in Social Systems: Groups, Teams, Communities”: 2007
- International Conference on Adaptive Hypermedia (AH) workshop on “Social Navigation and Community Based Adaptation Technologies”: 2006

NSF Panelist (2017.)

- Information & Intelligent Systems: 2017

Reviewer (2006 – present)

- SIGCHI Conference on Human Factors in Computing Systems (CHI): 2006–present
- ACM Conference on Computer Supported Cooperative Work (CSCW): 2006–present
- ACM Conference on Recommender Systems (RecSys): 2008–present
- ACM Transactions on Recommender Systems (TORS) Board of Reviewers: 2021–present

- ACM Transactions on Interactive Intelligent Systems (TIIS): 2018
- IEEE Intelligent Systems (IS): 2018
- ACM Transactions on the Web (TWEB): 2008, 2010, 2017
- ACM Transactions on Intelligent Systems and Technology (TIST): 2017
- Online Information Review (OIR): 2017
- International World Wide Web Conference (WWW): 2011
- ACM Conference on Recommender Systems (RecSys) workshop on “Recommenders and the Social Web”: 2009, 2010
- International Conference on Computational Linguistics (COLING): 2010
- ACM Special Interest Group on Information Retrieval (SIGIR): 2010
- Journal of Computer-Mediated Communication (JCMC): 2010
- International Conference on Communities and Technologies (C&T): 2009
- ACM Conference on Hypertext and Hypermedia (Hypertext): 2007
- International Conference on Mobile and Ubiquitous Systems (Mobiquitous): 2007
- Electronic Commerce Research (ECR): 2007
- International Conference on Intelligent User Interfaces (IUI): 2007
- International Conference on Adaptive Hypermedia (AH): 2006